

1. A breakaway support post for mounting a guardrail thereon as part of a highway guardrail system comprising:

an elongated body having a first end and a second end;

means for attaching the guardrail adjacent to the first end of the elongated body;

a plurality of slots formed in the elongated body intermediate the first end and the second end; and

the elongated body having a cross section and the slots oriented with respect to the cross section whereby an impact with one end of the attached guardrail will tend to buckle the breakaway support post and the breakaway support post will resist a rail face impact with the guardrail.

2. The breakaway support post of Claim 1 wherein the elongated body further comprises:

a metal I-beam having a web with a pair of flanges attached thereto; and

the slots formed in the flanges of the I-beam.

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3. The breakaway support post of Claim 1 wherein the means for attaching further comprises a block disposed between the first end of the elongated body and the guardrail to form a lateral offset between the guardrail and the breakaway support post.

4. The breakaway support post of Claim 1 further comprising at least one soil plate attached to the elongated body adjacent to the elongated slots.

Sub B> 5. A breakaway support post for mounting a guardrail thereon as part of a highway guardrail system comprising:

an elongated body having an upper portion and a lower portion;

a rotatable coupling assembly disposed between the upper portion and the lower portion of the elongated body;

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the upper portion of the elongated body having a first end;
the lower portion of the elongated body having a second end which may be inserted into the soil adjacent to a roadway;
means for attaching the guardrail adjacent to the first end of the upper portion; and
means for releasably securing the upper portion of the elongated body generally aligned with the lower portion of the elongated body whereby an impact with one end of the attached guardrail will tend to rotate the upper portion of the elongated body relative to the lower portion of the elongated body and the breakaway support post will resist a rail face impact with the guardrail

Sub S37 2 / 6. The breakaway support post of Claim 5 wherein the rotatable coupling further comprises:

a first U-shaped bracket and a second U-shaped bracket with portions of the first bracket disposed within the second bracket; and
a pivot pin extending laterally through adjacent portions of the first bracket and the second bracket whereby the upper portion of the elongated body may rotate relative to the lower portion of the elongated body.

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3 7. The breakaway support post of Claim 5 wherein the upper portion of the elongated body and the lower portion of the elongated body further comprise:

a metal I-beam having a web with a pair of flanges attached thereto;
a respective bracket attached to adjacent ends of the upper portion and the lower portion; and
a pivot pin extending through the brackets and aligned approximately parallel with the web of the upper portion whereby the breakaway support post will resist a rail face impact with the guardrail.

Sub D4) 8. The breakaway support post of Claim 5 further comprising a block disposed between the guardrail and the upper portion of the elongated body and the guardrail to form a

lateral offset between the guardrail and the breakaway support post.

9. A breakaway support post for mounting a guardrail thereon as part of a highway guardrail system comprising:

an elongated body having an upper portion and a lower portion;

the upper portion of the elongated body having a first end;

the lower portion of the elongated body having a second end;

means for attaching the guardrail adjacent to the upper portion; and

means for coupling the first portion of the elongated body with the second portion of the elongated body whereby an impact with one end of the attached guardrail will tend to rotate the first portion of the elongated body relative to the second portion of the elongated body and the breakaway support post will resist a rail face impact with the guardrail.

10. The breakaway support post of Claim 9 wherein the means for coupling the first portion with the second portion comprises first and second breaker bars.

A. Sub 16. The breakaway support post of Claim 10 wherein the first and second breaker bars are formed with respective chambered surfaces to facilitate rotation of the upper portion relative to the lower portion and to facilitate separation of the upper portion of the elongated body from the lower portion of the elongated body.

16. The breakaway support post of Claim 10 wherein the first and second breaker bars further comprising protruding members to facilitate rotation of the upper portion relative to the lower portion and to facilitate separation of the upper portion of the elongated body from the lower portion of the elongated body.

13. A roadway guardrail system, comprising:

a guardrail;

at least one support post having an upper portion and a lower portion, the upper portion,

having a lower end and the lower portion having an upper end;

the upper portion being coupled to the guardrail and the lower portion being structured and arranged to be located in the earth;

the upper portion lower end comprising a first member and the lower portion upper end comprising a second member;

the first and second members being coupled together with at least two rods, the rods laying along an imaginary line that extends on a strong direction, wherein the post exhibits a high mechanical strength in the strong direction, there being a weak direction that is generally perpendicular to the strong direction, wherein the support post exhibits a low mechanical strength in the weak direction; and

at least one spacer located between the first and second members, there being a gap on at least one side of the imaginary line, wherein the upper portion can rotate relative to the lower portion in the weak direction when subjected to a force.

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14. The roadway guardrail system of Claim 13 wherein the upper and lower portions comprise I-beams, each of the I-beam portions having a web, with the web of the upper portion being generally aligned with the web of the lower portion, and with the imaginary line extending generally in the same direction as the webs.

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15. The roadway guardrail system of Claim 13 wherein the rods further comprise bolts secured by nuts.

16. The roadway guardrail system of claim 13 wherein the first and second members each comprise flanges that extend transversely from a longitudinal axis of the respective upper and lower portions.

17. The roadway guardrail system of claim 13 wherein the spacer comprises a projection that extends from one of the first and second members and that bears on the other of the first and second members.



18. The roadway guardrail system of claim 13 wherein the spacer comprises two projections, with each projection extending from a respective one of the first and second members, the projections generally bearing on each other.

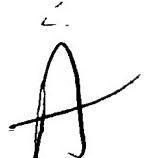
19. The roadway guardrail system of claim 13 wherein the spacer comprises stops located on the rods.

20. The roadway guardrail system of claim 13, further comprising:
the upper and lower portions are I-beams, each of the I-beam portions having a web, with the web of the upper portion being generally aligned with the web of the lower portion, and with the imaginary line extending in the same direction as the webs;
the rods are bolts secured by nuts;
the first and second members each comprise flanges that extend transversely from a longitudinal axis of the respective upper and lower portions; and
the spacer comprises a projection that extends from one of the first and second members and that bears on the other of the first and second members.

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21. The roadway guardrail system of claim 13, wherein:
the upper and lower portions are I-beams, each of the I-beam portions having a web, with the web of the upper portion being generally aligned with the web of the lower portion, and with the imaginary line extending in the same direction as the webs;
the rods are bolts secured by nuts;
the first and second members each comprise flanges that extend transversely from a longitudinal axis of the respective upper and lower portions; and
the spacer comprises stops located on the rods.

22. A roadway guardrail system, comprising:
a guardrail;
at least one support post having an upper portion and a lower portion, the upper portion



having a lower end and the lower portion having an upper end;

the upper portion having a first side that is coupled to the guardrail and the lower portion being structured and arranged to be located in the earth;

the upper portion lower end comprising a first member and the lower portion upper end comprising a second member;

the first and second members coupled with each other by a pin located along an imaginary line extending along a strong direction, wherein the support post exhibits a high mechanical strength in the strong direction, there being a weak direction that is generally perpendicular to the strong direction, wherein the support post exhibits a low mechanical strength in the weak direction, the pin being located on the first side of the upper portion; and

at least one spacer located between the first and second members, there being a gap on at least one side of the imaginary line, wherein the upper portion can rotate relative to the lower portion in the weak direction when subjected to a force.

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23. A roadway guardrail system, comprising:

a guardrail;

at least one support post, the support post comprising an I-beam having a web and flanges, the support post having a first end and a second end, the first end being coupled to the guardrail and the second end being structured and arranged to be located in the earth; and

the flanges having vertical slots therein located near the surface of the earth when the support post is located in the earth.

Sub B5 > 24. A roadway guardrail system comprising:

a guardrail;

at least one support post having an upper portion and a lower portion, the upper portion having a lower end and the lower portion having an upper end;

the upper portion being coupled to the guardrail and the lower portion being structured and arranged to be located in the earth;

the upper portion lower end being pivotally coupled to the lower portion by a hinge, the

hinge having a pivot pin that extends in a strong direction, wherein the post exhibits a high mechanical strength in the strong direction, the hinge having a weak direction that is generally perpendicular to the strong direction, wherein the upper portion can rotate relative to the lower direction from an impact in the weak direction; and

the hinge is releasably restrained from pivoting by a shear pin, the shear pin being smaller in diameter than the pivot pin.

25. The roadway guardrail system of Claim 24 wherein the upper and lower portions each comprise an I-beam with the webs of the I-beams being oriented generally perpendicular to the guardrail.

Sub Ia > 11 26. The roadway guardrail system of Claim 24 wherein the hinge comprises:

a first U-shaped bracket and a second U-shaped bracket with portions of the first bracket being disposed within the second bracket; and

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the pivot pin extending laterally through the first bracket and through adjacent portions of the first bracket and the second bracket whereby the upper portion of the post can rotate relative to the lower portion of the post.

12 27. The roadway guardrail system of Claim 24 wherein the hinge has a first bracket coupled to the upper portion and a second bracket coupled to the lower portion, the first bracket receiving the pivot pin by a slot, the slot being oriented so that when the upper portion is rotated relative to the lower portion, the upper portion can separate from the lower portion.

Sub 28 > 28. A support post for mounting a guardrail thereon as part of a highway guardrail system comprising:

an elongated body having a first portion and a second portion;

a frangible connection for coupling the first portion with the second portion; and

the frangible connection oriented relative to the guardrail whereby an impact with one end of the guardrail will tend to buckle the support post and the support post will resist a rail face

impact with the guardrail.

29. The support post of Claim 28 further comprising:
the elongated body having a first end and a second end; and
a plurality of slots formed in the elongated body intermediate the first end and the second end to define in part the frangible connection.

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30. The support post of Claim 28 wherein the frangible connection further comprises a rotatable coupling assembly disposed between the upper portion and the lower portion of the elongated body.

31. The support post of Claim 28 wherein the frangible connection further comprises a releasable hinge.

Please add the following new claims 32-35.

Sub B7 32. (New) A support post for mounting to a guardrail as part of a highway guardrail system, comprising:

a first elongated member having first and second ends, with the first end of the first member being structured and arranged to couple to the guardrail;

a second elongated member having first and second ends, with the first end of the second member being structured and arranged to be inserted into the ground adjacent to a roadway;

one of the second ends having a pair of first flanges extending therefrom, the first flanges being separated from each other by a gap;

the other of the second ends having a second flange extending therefrom;

the second flange being received in the gap between the first flanges;

the first and second flanges being coupled together by a pin, wherein the first and second members are rotatably coupled together so as to move between a lengthened

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position and a shortened position; and

the first and second members being maintained in the lengthened position by a shearable body extending between the second flange and at least one of the first flanges.

33. (New) A support post for mounting to a guardrail as part of a highway guardrail system,

comprising:

a first I-beam having first and second ends, with the first end of the first I-beam being structured and arranged to couple to the guardrail;

a second I-beam having first and second ends, with the first end of the second I-beam being structured and arranged to be inserted into the ground adjacent to a roadway;

each of the first and second I-beams having a web and flanges, with the flanges at the respective second ends having extensions protruding beyond the web;

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the extensions of the first I-beam being located adjacent to the extensions of the second I-beam, the extensions of the first and second I-beams being pivotally coupled together by a hinge so that the first and second I-beams pivot about an axis that is parallel to the web of the first I-beam;

the first I-beam pivoting with respect to the second I-beam between a lengthened position and a shortened position; and

the first and second I-beams being maintained in the lengthened position by a shearable member extending between at least one of the extensions of the first I-beam and at least one of the extensions of the second I-beam.

34. (New) A roadway guardrail system, comprising:

a guardrail;

a plurality of support posts coupled to the guardrail;

at least one of the support posts comprising first and second elongated members, with the first member having first and second ends, the first end of the first member being

coupled to the guardrail, the first end of the second member being structured and arranged to be inserted into the ground adjacent to a roadway;

one of the second ends having a pair of first flanges extending therefrom, the first flanges being separated from each other by a gap;

the other of the second ends having a second flange extending therefrom;

the second flange being received in the gap between the first flanges;

the first and second flanges being coupled together by a pin, the pin being generally transverse to the guardrail, wherein the first and second members are rotatably coupled together so as to move between a lengthened position and a shortened position; and

the first and second members being maintained in the lengthened position by a shearable body extending between the second flange and at least one of the first flanges.

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35. (New) A roadway guardrail system, comprising:

a guardrail;

a plurality of support posts coupled to the guardrail;

at least one of the support posts comprising first and second I-beams, with each of the first and second I-beams comprising a web and flanges;

the first I-beam having first and second ends, with one of the flanges at the first end of the first I-beam being coupled to the guardrail;

the second I-beam having first and second ends, with the first end of the second I-beam being structured and arranged to be inserted into the ground adjacent to a roadway;

each of the first and second I-beams having the respective flanges extending from the respective second end to the respective first end, each of the first and second I-beams having the respective web extending from the respective first end to a location that is short of the respective second end;

the first I-beam flanges at the first I-beam second end being located adjacent to the second I-beam flanges at the second I-beam second end, with the first and second I-beams being pivotally coupled by a hinge so that the first and second I-beams pivot about an axis